



CHAPTER 8

Decimals

Introduction

A part of a whole can be expressed in decimal or decimals are another way of representing fractions. In earlier classes, we learnt that dot represents a decimal point. Now, we shall learn more about decimals.

To Read a Decimal Number

A decimal or a decimal number contains a whole number part and a decimal number part separated by a dot (.).

For example : In 356.47, 356 is the whole part and 47 is the decimal part.



1 Write the following decimal numbers as number names.

- (i) 34.56 (ii) 4.778 (iii) 872.14
(iv) 26.346

Soln.: (i) 34.56 – Thirty four point five six.

(ii) 4.778 – Four point seven seven eight.



ILLUSTRATION

(iii) 872.14 – Eight hundred seventy two point one four

(iv) 26.346 – Twenty six point three four six.

Decimal Fractions

The fractions in which the denominators are 10, 100, 1000, etc..., are known as decimal fractions.

Place value of decimal numbers

In the whole number part, if we move right to left by 1 place, the value of a digit increases by 10 times for each place. In the decimal part, if we move left to right by 1 place, the value of a digit decreases by $\frac{1}{10}$ for each place.

See the following place value chart for 4563.427, 879.34 and 6284.932.

Thousands 1000	Hundreds 100	Tens 10	Ones 1	Decimal point	Tenths $\frac{1}{10}$	Hundredths $\frac{1}{100}$	Thousandths $\frac{1}{1000}$
4	5	6	3	.	4	2	7
	8	7	9	.	3	4	
6	2	8	4	.	9	3	2

Tenths place

If we move one place to the right of ones place, the place value becomes $\frac{1}{10}$ of the digit and this place is known as tenths place.

For example : Place value of 6 in 43.628 is $\frac{6}{10}$.

Hundredths place

If we move one place to the right of tenths place, the place value becomes $\frac{1}{100}$ of the digit and this place is known as hundredths place.

For example : Place value of 2 in 43.628 is $\frac{2}{100}$.

Thousandths place

If we move one place to the right of hundredths place, the place value becomes $\frac{1}{1000}$ of the digit and this place is known as thousandths place.

For example : Place value of 8 in 43.628 is $\frac{8}{1000}$.

2 Find the place value of 6, 9 and 4 in 358.694.

Soln.: Place value of 6 is $\frac{6}{10}$

Place value of 9 is $\frac{9}{100}$

Place value of 4 is $\frac{4}{1000}$

3 Find the place value of following in the number 829.435.



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(i) 4

(ii) 3

(iii) 5

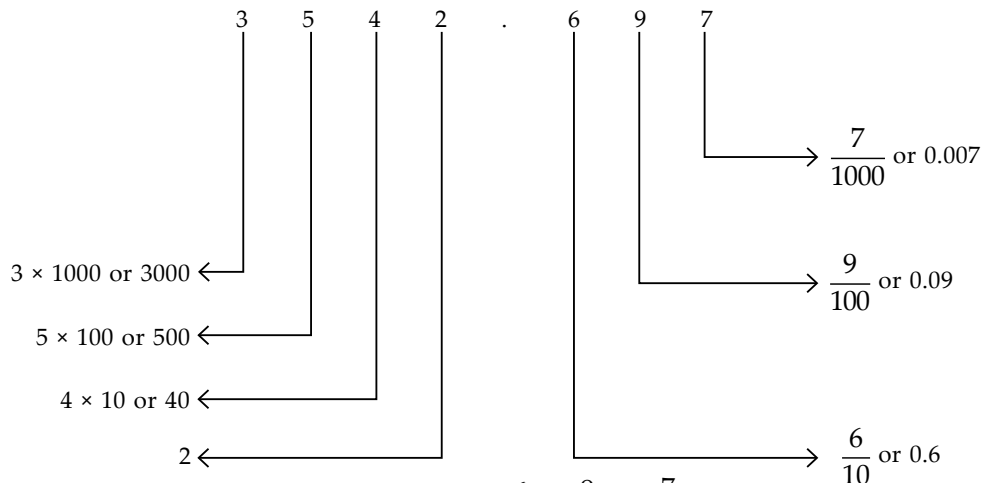
Soln.: (i) Place value of 4 is $\frac{4}{10}$

(ii) Place value of 3 is $\frac{3}{100}$

(iii) Place value of 5 is $\frac{5}{1000}$

Expanded form

In 3542.697, the place values are given as



\therefore 3542.697 can be written as $3000 + 500 + 40 + 2 + \frac{6}{10} + \frac{9}{100} + \frac{7}{1000}$. This is known as expanded form of a decimal number.

4 Write the following in numeral form.

(i) Twenty and five-tenths.

(ii) Five ones, two-tenths and four-hundredths.

(iii) Three hundred two ones and six hundredths.

(iv) Two ones and eight thousandths.

Soln.: (i) $20 + \frac{5}{10} = 20.5$



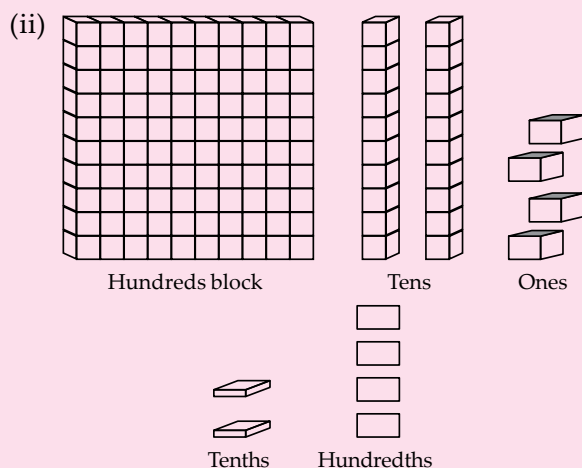
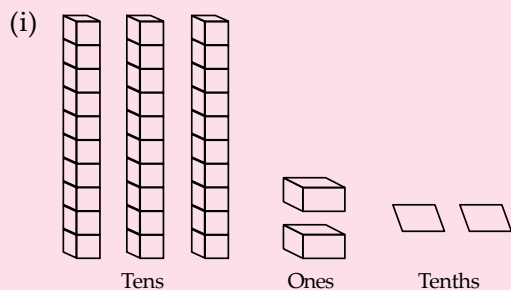
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(ii) $5 + \frac{2}{10} + \frac{4}{100} = 5.24$

(iii) $300 + 2 + \frac{6}{100} = 302.06$

(iv) $2 + \frac{8}{1000} = 2.008$

5 Write the following as decimals:



Soln.: (i) $30 + 2 + \frac{2}{10} = 32.2$

(ii) $100 + 20 + 4 + \frac{2}{10} + \frac{4}{100} = 124.24$

6 Write the following as decimals.

(i) $40 + 2 + \frac{6}{10}$ (ii) $800 + 20 + \frac{8}{10} + \frac{4}{100}$



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(iii) $20 + 5 + \frac{9}{10} + \frac{6}{1000}$

Soln.: (i) In $40 + 2 + \frac{6}{10}$

We have 4 tens, 2 ones and 6 tenths

∴ Decimal is 42.6.

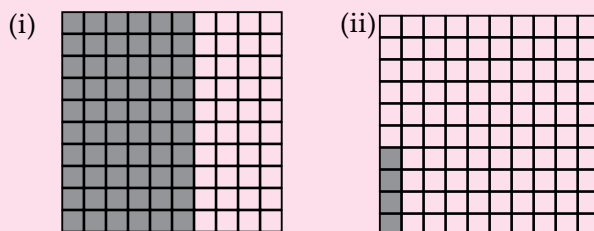
(ii) In $800 + 20 + \frac{8}{10} + \frac{4}{100}$, we have 8 hundreds, 2 tens, 8 tenths and 4 hundredths.

∴ Decimal is 820.84

(iii) In $20 + 5 + \frac{9}{10} + \frac{6}{1000}$, we have 2 tens, 5 ones, 9 tenths and 6 thousandths

∴ Decimal is 25.906.

7 Give a decimal for the number of shaded squares.



Soln.: (i) 60 parts are shaded out of 100 parts

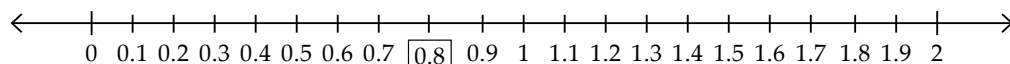
i.e., $\frac{60}{100} = 0.6$

(ii) 4 parts are shaded out of 100 parts i.e.,

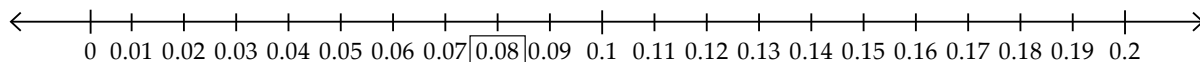
$\frac{4}{100} = 0.04$

Representing Decimals on Number Line

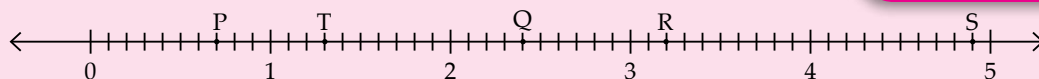
Let us try to represent 0.8 on a number line. We know that 0.8 is greater than 0 but less than 1. So we divide the numbers from 0 to 1 into 10 equal parts on number line and name it as 0.1, 0.2, and so on till 1.0.



Similarly, if we had to place 0.08, we further divide 0.0 to 0.1 into 10 equal parts and name it as 0.01, 0.02 and so on till 0.10.



8 Find the values of P, Q, R, S and T on the given number line.



Soln.: P = 0.7, Q = 2.4, R = 3.2, S = 4.9 and T = 1.3



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Comparing Decimals

First, compare the whole numbers to the left of the decimal point.

If they are not the same, the smaller decimal number is the one with the smaller whole numbers.

On the other hand, if they are the same, compare the whole number to the right of the decimal point. We start with tenths place and then hundredths place, etc. If one decimal has a higher number in the tenths place then it is larger than a decimal with fewer tenths. If the tenths are equal compare the hundredths, then the thousandths etc, until one decimal is larger.

Like and unlike decimals

- Decimals having equal number of digits to the right of the decimal point are known as like decimals. For example: 5.231 and 6.498
- Decimals not having equal number of digits to the right of the decimal point are known as unlike decimals. For example: 6.92 and 8.321.

Converting unlike decimals into like decimals

We can convert unlike decimals into like decimals by adding zeroes to the right of decimal point.

9 Which decimal is greater?

(i) 82.123 or 68.21

(ii) 0.432 or 0.598

(iii) 32.064 or 32.011

Soln.: (i) 82.123 or 68.21

Since, whole parts of both the numbers are different.

So, $82.123 > 68.21$

(ii) 0.432 or 0.598

Since, whole parts of both the numbers are same.

So, we compare tenths parts. Hence, $0.598 > 0.432$

(iii) 32.064 or 32.011

Since, whole parts of both the numbers are same.

So, we compare tenths parts. But tenths parts are also same. So, we compare hundredths parts.

Hence, $32.064 > 32.011$

10 Convert 8.1, 4.32 and 7.691 into like decimals.



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Soln.: $8.1 = 8.100$, $4.32 = 4.320$ and $7.691 = 7.691$

Hence, 8.100, 4.320 and 7.691 are like decimals.

11 Arrange the following in ascending order.

32.435, 32.336, 32, 32.003, 32.3

Soln.: Depending on their place value, we can arrange them in ascending order as 32, 32.003, 32.3, 32.336, 32.435.

12 Arrange the following in descending order.
65.6, 65.604, 65.064, 65, 65.664

Soln.: Depending on their place value, we can arrange them in descending order as 65.664, 65.604, 65.6, 65.064, 65.

Conversion of fractions into decimals

Step 1 : Find a number you can multiply by the bottom of the fraction to make it 10, or 100, or 1000, or any 1 followed by 0s.

Step 2 : Multiply both top and bottom by that number.

Step 3 : Then write down just the top number, putting the decimal point in the correct spot (one space from the right hand side for every zero in the bottom number.)

13 Convert the following fractions into decimals.

(i) $\frac{13}{5}$ (ii) $\frac{3}{4}$ (iii) $\frac{25}{2}$

Soln.: (i) $\frac{13}{5}$

Multiply the numerator and denominator by 2 to make denominator as 10

$$\therefore \frac{13}{5} \times \frac{2}{2} = \frac{26}{10} = 2.6$$

$$\therefore \frac{13}{5} = 2.6$$

(ii) $\frac{3}{4}$

Multiply the numerator and denominator by 25 to make denominator 100.



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$$\therefore \frac{3}{4} \times \frac{25}{25} = \frac{75}{100} = 0.75$$

(iii) $\frac{25}{2}$

Multiply the numerator and denominator by 5 to make denominator 10.

$$\therefore \frac{25}{2} \times \frac{5}{5} = \frac{125}{10} = 12.5$$

$$\therefore \frac{25}{2} = 12.5$$

Conversion of decimals into fractions

Step 1 : Write down the decimal divided by 1, like this: $\frac{\text{Decimal}}{1}$

Step 2 : Multiply both top and bottom by 10 for every digit after the decimal point. (For example, if there are two digits after the decimal point, then use 100, if there are three then use 1000, etc.)

Step 3 : Simplify (or reduce) the fraction.

14 Convert the following decimals into fractions.

(i) 0.06 (ii) 9.645 (iii) 7.2

Soln.: (i) $0.06 = \frac{0.06}{1}$

Since, there are two digits after decimal point, so we multiply both top & bottom by 100.

$$\frac{0.06}{1} \times \frac{100}{100} = \frac{6}{100} = \frac{3}{50}$$

$$\text{Hence, } 0.06 = \frac{3}{50}$$

(ii) $9.645 = \frac{9.645}{1}$

Since, there are three digits after decimal point, so, we multiply both top & bottom by 1000.



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$$\frac{9.645}{1} \times \frac{1000}{1000} = \frac{9645}{1000} = \frac{1929}{200}$$

$$\text{Hence, } 9.645 = \frac{1929}{200}$$

(iii) $7.2 = \frac{7.2}{1}$

Since, there is one digit after decimal point, so we multiply both top & bottom by 10.

$$\frac{7.2}{1} \times \frac{10}{10} = \frac{72}{10} = \frac{36}{5}$$

$$\text{Hence, } 7.2 = \frac{36}{5}$$

Use of Decimals

Money

We know that, 100 paise = ₹ 1

$$\therefore 1 \text{ paise} = ₹ \frac{1}{100} = ₹ 0.01$$

Length

We know that, 100 cm = 1 m

$$\therefore 1 \text{ cm} = \frac{1}{100} \text{ m} = 0.01 \text{ m}$$

Similarly, 1000 m = 1 km

Weight

We know that, $1000 \text{ g} = 1 \text{ kg}$

$$\therefore 1 \text{ g} = \frac{1}{1000} \text{ kg} = 0.001 \text{ kg}$$

15 Convert the following into rupees.

- (i) 560 paise (ii) 50 rupees 80 paise

Soln.: (i) $1 \text{ paise} = ₹ \frac{1}{100}$

So, $560 \text{ paise} = ₹ \frac{560}{100} = ₹ 5.60$

(ii) $1 \text{ paise} = ₹ \frac{1}{100}$, $80 \text{ paise} = ₹ \frac{80}{100} = ₹ 0.80$

So, $50 \text{ rupees } 80 \text{ paise} = ₹ 50 + ₹ 0.80 = ₹ 50.80$

16 Convert the following as instructed.

- (i) 2004 cm into m (ii) 8 km 42 m into km

- (iii) 428 mm into cm

Soln.: (i) $1 \text{ cm} = \frac{1}{100} \text{ m}$

So, $2004 \text{ cm} = \frac{2004}{100} \text{ m} = 20.04 \text{ m}$

(ii) $1 \text{ m} = \frac{1}{1000} \text{ km}$



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$$\therefore 42 \text{ m} = \frac{42}{1000} \text{ km} = 0.042 \text{ km}$$

So, $8 \text{ km } 42 \text{ m} = 8 \text{ km} + 0.042 \text{ km} = 8.042 \text{ km}$

(iii) $1 \text{ mm} = \frac{1}{10} \text{ cm}$

So, $428 \text{ mm} = \frac{428}{10} \text{ cm} = 42.8 \text{ cm}$

17 Convert the following into kg.

- (i) 3840 g (ii) 52 kg 50 g

Soln.: (i) $1 \text{ g} = \frac{1}{1000} \text{ kg}$

So, $3840 \text{ g} = \frac{3840}{1000} \text{ kg} = 3.840 \text{ kg}$

(ii) $1 \text{ g} = \frac{1}{1000} \text{ kg}$ $\therefore 50 \text{ g} = \frac{50}{1000} \text{ kg} = 0.050 \text{ kg}$

So, $52 \text{ kg } 50 \text{ g} = 52 \text{ kg} + 0.050 \text{ kg} = 52.050 \text{ kg}$

Addition of decimals

To add the decimals, we proceed as following:

- Convert the given decimals into like decimals.
- Write one number below the other so that the bottom decimal point is directly below and lined up with the top decimal point.
- Then add using column addition, remembering to put the decimal point in the answer.

18 Add the following decimals.

(i) $2.237 + 0.2113 + 5.5664$

(ii) $9.176 + 1.66$

(iii) $2.3667 + 2.57 + 3.22$

Soln.: (i)

$$\begin{array}{r} 2.2370 \\ 0.2113 \\ + 5.5664 \\ \hline 8.0147 \end{array}$$

(ii)

$$\begin{array}{r} 9.176 \\ + 1.660 \\ \hline 10.836 \end{array}$$



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(iii)

$$\begin{array}{r} 2.3667 \\ 2.5700 \\ + 3.2200 \\ \hline 8.1567 \end{array}$$

19 Bala has ₹ 69.24. His father gave him ₹ 100.48 and his mother gave ₹ 50.40. How much amount he has?

Soln.: Amount of money Bala has = ₹ 69.24

Amount of money his father gave = ₹ 100.48

Amount of money his mother gave = ₹ 50.40

Total money Bala has = ₹ 69.24 + ₹ 100.48 + ₹ 50.40
= ₹ 220.12

Subtraction of Decimals

To subtract the decimals, we proceed as follows:

- Convert the given decimals into like decimals.
- Write one number below the other so that the bottom decimal point is directly below and lined up with the top decimal point.
- Then subtract normally, remembering to put the decimal point in the answer.

20 Solve:

(i) Subtract 1.7609 from 6.935

(ii) Subtract 8.61 from 9.9603

(iii) Subtract 2.8536 from 3.22

Soln.: (i)

$$\begin{array}{r} 6 . 9 3 5 0 \\ - 1 . 7 6 0 9 \\ \hline 5 . 1 7 4 1 \end{array}$$

(ii)

$$\begin{array}{r} 9 . 9 6 0 3 \\ - 8 . 6 1 0 0 \\ \hline 1 . 3 5 0 3 \end{array}$$



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(iii)

$$\begin{array}{r} 3 . 2 2 0 0 \\ - 2 . 8 5 3 6 \\ \hline 0 . 3 6 6 4 \end{array}$$

21 Priya bought 5.25 kg of rice. She consumed 1.73 kg of rice. How much rice remains with her?

Soln.: Quantity of rice Priya bought = 5.25 kg
Quantity of rice she consumed = 1.73 kg
Quantity of rice left with her = 5.25 kg – 1.73 kg
= 3.52 kg

- A decimal has two parts - Whole number part and Decimal part.
 - The fractions in which the denominators are 10, 100, 1000 etc. are known as decimal fractions.
 - Decimals having the same number of decimal places are called like decimals, otherwise they are unlike decimals.
 - To convert a decimal into a fraction, write the figure without the decimal point as the numerator of the fraction. In the denominator write 1 followed by as many zeroes as there are decimal places in the given decimal.
 - Zero to the extreme right of the decimal number does not have any value.
 - To add or subtract any two or more decimal numbers, it is better to change them into like decimals and then do the required operation of numbers.
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SOLVED EXAMPLES

1. Write the following numbers in the place value chart (table).

(i) 142.76 (ii) 32.345 (iii) 1763.42

Soln.:

	Number	Thousands	Hundreds	Tens	Ones	Decimal	Tenths	Hundredths	Thousandths
(i)	142.76		1	4	2	.	7	6	
(ii)	32.345			3	2	.	3	4	5
(iii)	1763.42	1	7	6	3	.	4	2	

2. Write each of the following as a decimal.

(i) Two hundred five and three hundredths

(ii) Thirteen point one two three

(iii) Eight and thirty five thousandths

Soln.: (i) Two hundred five and three hundredths
 $= 205 + \frac{3}{100}$

$$= 2 \times 100 + 0 \times 10 + 5 \times 1 + 0 \times \frac{1}{10} + 3 \times \frac{1}{100}$$

$$= 205.03$$

(ii) Thirteen point one two three = 13.123

(iii) Eight and thirty five thousandths

$$= 8 + \frac{35}{1000} = 8 + \frac{30 + 5}{1000} = 8 + \frac{30}{1000} + \frac{5}{1000}$$

$$= 8 + \frac{0}{10} + \frac{3}{100} + \frac{5}{1000} = 8.035$$

3. Sundaram bought a toothpaste for ₹ 18.75, soap for ₹ 6 and shoe polish for ₹ 12.50. He gave a fifty rupee note to the shopkeeper. Find the money he got back.

Soln.: Cost of the toothpaste = ₹ 18.75

Cost of the soap = ₹ 6.00

Cost of the shoe polish = ₹ 12.50

Total expenditure = ₹ 37.25

Money he got back = ₹ 50 - 37.25 = ₹ 12.75

4. Write the decimal numbers represented by the points A, B and C on the number line.



Soln.: A = 1.1, B = 2.7, C = 3.5

5. Compare the following.

(i) 63.84 and 57.98 (ii) 27.04 and 27.10

(iii) 82.438 and 82.434 (iv) 91.109 and 91.121

Soln.: (i) $63.84 > 57.98$ (ii) $27.04 < 27.10$

(iii) $82.438 > 82.434$ (iv) $91.109 < 91.121$

6. Write each of the following as decimals.

(i) $300 + 60 + 9 + \frac{5}{10} + \frac{8}{100}$

(ii) $700 + 9 + \frac{2}{10} + \frac{6}{1000}$

(iii) $\frac{8}{10} + \frac{5}{100} + \frac{4}{1000}$ (iv) $20 + 4 + \frac{1}{100}$

Soln.: (i) $300 + 60 + 9 + \frac{5}{10} + \frac{8}{100} = 369.58$

(ii) $700 + 9 + \frac{2}{10} + \frac{6}{1000} = 709.206$

(iii) $\frac{8}{10} + \frac{5}{100} + \frac{4}{1000} = 0.854$

(iv) $20 + 4 + \frac{1}{100} = 24.01$

7. Using decimals, express:

(i) 10 cm 6 mm as cm

(ii) 108 cm as m

(iii) ₹ 5,40 paise as rupees

(iv) ₹ 50,18 paise as rupees

Soln.: (i) $10 \text{ cm } 6 \text{ mm} = \frac{10}{1} \text{ cm} + \frac{6}{10} \text{ cm}$

$$= \frac{100 \text{ cm} + 6 \text{ cm}}{10} = \frac{106}{10} \text{ cm} = 10.6 \text{ cm}$$

(ii) $108 \text{ cm} = \frac{108}{100} \text{ m} = 1.08 \text{ m}$

(iii) $₹ 5 + 40 \text{ paise} = ₹ 5 + ₹ \frac{40}{100}$

$$= \frac{₹ 500 + ₹ 40}{100} = ₹ \frac{540}{100} = ₹ 5.40$$

(iv) $₹ 50 + 18 \text{ paise} = ₹ 50 + ₹ \frac{18}{100}$

$$= \frac{₹ 5000 + ₹ 18}{100} = ₹ \frac{5018}{100} = ₹ 50.18$$

8. Shweta travelled 12 km 220 m by bus, 8 km 485 m by car and the rest 760 m she walked. How much distance did she travel in all?

Soln.: Distance travelled by bus = 12 km 220 m
 $= 12.220 \text{ km}$

Distance travelled by car = 8 km 485 m = 8.485 km

Distance travelled by walking = 760 m = 0.760 km

Therefore, total distance travelled is

$$= 12.220 \text{ km} + 8.485 \text{ km} + 0.760 \text{ km} = 21.465 \text{ km}$$

Hence, Shweta travelled 21.465 km in all.

9. Write the following decimals in expanded form.

- (i) 2.75 (ii) 542.344
(iii) 76.08 (iv) 1563.704

Soln.: (i) $2.75 = 2 + \frac{7}{10} + \frac{5}{100}$

(ii) $542.344 = 500 + 40 + 2 + \frac{3}{10} + \frac{4}{100} + \frac{4}{1000}$

(iii) $76.08 = 70 + 6 + \frac{8}{100}$

(iv) $1563.704 = 1000 + 500 + 60 + 3 + \frac{7}{10} + \frac{4}{1000}$

10. Convert the following fractions into decimals.

(i) $\frac{85}{1000}$ (ii) $\frac{212}{250}$

(iii) $\frac{4}{5}$ (iv) $\frac{77}{25}$

Soln.: (i) $\frac{85}{1000} = 0.085$

(ii) $\frac{212}{250} = \frac{212 \times 4}{250 \times 4} = \frac{848}{1000} = 0.848$

(iii) $\frac{4}{5} = \frac{4 \times 2}{5 \times 2} = \frac{8}{10} = 0.8$

(iv) $\frac{77}{25} = \frac{77 \times 4}{25 \times 4} = \frac{308}{100} = 3.08$

11. Convert the following decimals into fractions.

- (i) 120.04 (ii) 9.435
(iii) 15.012 (iv) 0.75

Soln.: (i) $120.04 = \frac{120.04}{1} \times \frac{100}{100} = \frac{12004}{100} = \frac{3001}{25}$

(ii) $9.435 = \frac{9.435}{1} \times \frac{1000}{1000} = \frac{9435}{1000} = \frac{1887}{200}$

(iii) $15.012 = \frac{15.012}{1} \times \frac{1000}{1000} = \frac{15012}{1000} = \frac{3753}{250}$

(iv) $0.75 = \frac{0.75}{1} \times \frac{100}{100} = \frac{75}{100} = \frac{3}{4}$

12. Tanuj walked 8.62 km on Monday, 7.05 km on Tuesday and some distance on Wednesday. If he walked 21015 m in three days, how much distance did he walk on Wednesday?

Soln.: Distance walked by Tanuj on Monday = 8.62 km

Distance walked by Tanuj on Tuesday = 7.05 km

Distance walked by Tanuj on Monday and Tuesday = 8.62 km + 7.05 km

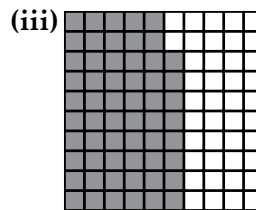
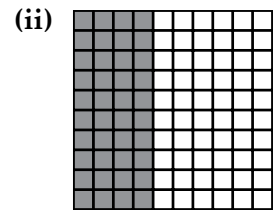
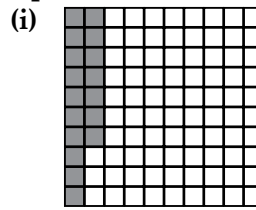
= 15.67 km = 15.670 km

Distance walked by Tanuj on Monday, Tuesday and Wednesday = 21015 m

= $\frac{21015}{1000}$ km = 21.015 km

\therefore Distance walked by Tanuj on Wednesday = 21.015 km – 15.670 km = 5.345 km

13. Give a decimal for the number of shaded squares.



Soln.: (i) 17 parts are shaded out of 100 parts.

i.e., $\frac{17}{100} = 0.17$

(ii) 40 parts are shaded out of 100 parts

i.e., $\frac{40}{100} = 0.40$

(iii) 58 parts are shaded out of 100 parts

i.e., $\frac{58}{100} = 0.58$

14. Write the place value of 6 in the following decimal numbers.

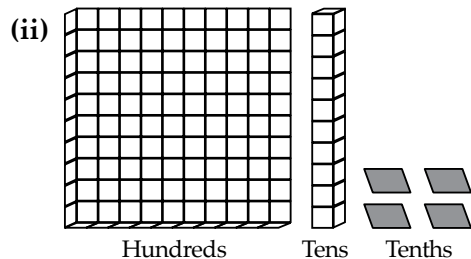
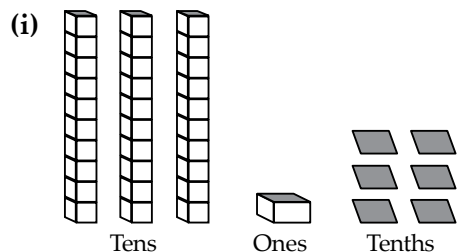
- (i) 28.63 (ii) 15.16 (iii) 8.036

Soln.: (i) Place value of 6 in 28.63 is $\frac{6}{10}$.

(ii) Place value of 6 in 15.16 is $\frac{6}{100}$.

(iii) Place value of 6 in 8.036 is $\frac{6}{1000}$.

15. Write the following as numbers.



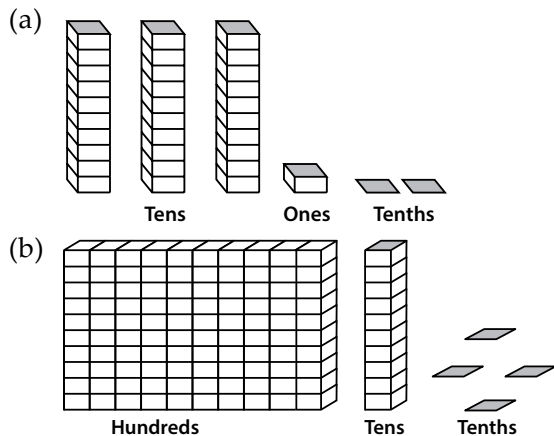
Soln.: (i) $30 + 1 + \frac{6}{10} = 31.6$

(ii) $100 + 10 + \frac{4}{10} = 110.4$

NCERT SECTION

Exercise 8.1

1. Write the following as numbers in the given table.



Hundreds	Tens	Ones	Tenths
(100)	(10)	(1)	$\left(\frac{1}{10}\right)$

Soln.:

	Hundreds (100)	Tens (10)	Ones (1)	Tenths $\left(\frac{1}{10}\right)$
(a)	0	3	1	2
(b)	1	1	0	4

2. Write the following decimals in the place value table.

- (a) 19.4 (b) 0.3
(c) 10.6 (d) 205.9

Soln.: (a)

Hundreds	Tens	Ones	Tenths
0	1	9	4

(b)

Hundreds	Tens	Ones	Tenths
0	0	0	3

(c)

Hundreds	Tens	Ones	Tenths
0	1	0	6

(d)

Hundreds	Tens	Ones	Tenths
2	0	5	9

3. Write each of the following as decimals :

- (a) Seven-tenths
(b) Two tens and nine-tenths
(c) Fourteen point six
(d) One hundred and two ones
(e) Six hundred point eight

Soln.: (a) Seven-tenths = 7 tenths = $\frac{7}{10} = 0.7$

(b) Two tens and nine-tenths = $2 \times 10 + \frac{9}{10}$
= $20 + 0.9 = 20.9$

(c) Fourteen point six = 14.6

(d) One hundred and two-ones = $100 + 2 \times 1$
= $100 + 2 = 102.0$

(e) Six hundred point eight = 600.8

4. Write each of the following as decimals:

(a) $\frac{5}{10}$ (b) $3 + \frac{7}{10}$

(c) $200 + 60 + 5 + \frac{1}{10}$ (d) $70 + \frac{8}{10}$

(e) $\frac{88}{10}$ (f) $4\frac{2}{10}$

(g) $\frac{3}{2}$ (h) $\frac{2}{5}$

(i) $\frac{12}{5}$ (j) $3\frac{3}{5}$

(k) $4\frac{1}{2}$

Soln.: (a) $\frac{5}{10} = 0.5$ (b) $3 + \frac{7}{10} = 3 + 0.7 = 3.7$

(c) $200 + 60 + 5 + \frac{1}{10} = 200 + 60 + 5 + 0.1 = 265.1$

(d) $70 + \frac{8}{10} = 70 + 0.8 = 70.8$

(e) $\frac{88}{10} = \frac{80+8}{10} = \frac{80}{10} + \frac{8}{10} = 8 + \frac{8}{10} = 8 + 0.8 = 8.8$

(f) $4\frac{2}{10} = 4 + \frac{2}{10} = 4 + 0.2 = 4.2$

(g) $\frac{3}{2} = \frac{3 \times 5}{2 \times 5} = \frac{15}{10} = \frac{10+5}{10} = \frac{10}{10} + \frac{5}{10} = 1 + 0.5 = 1.5$

(h) $\frac{2}{5} = \frac{2 \times 2}{5 \times 2} = \frac{4}{10} = 0.4$

(i) $\frac{12}{5} = \frac{12 \times 2}{5 \times 2} = \frac{24}{10} = \frac{20+4}{10} = \frac{20}{10} + \frac{4}{10} = 2 + 0.4 = 2.4$

(j) $3\frac{3}{5} = 3 + \frac{3}{5} = 3 + \frac{3 \times 2}{5 \times 2} = 3 + \frac{6}{10} = 3 + 0.6 = 3.6$

(k) $4\frac{1}{2} = 4 + \frac{1}{2} = 4 + \frac{1 \times 5}{2 \times 5} = 4 + \frac{5}{10} = 4 + 0.5 = 4.5$

5. Write the following decimals as fractions. Reduce the fractions to lowest form.

- (a) 0.6 (b) 2.5
(c) 1.0 (d) 3.8
(e) 13.7 (f) 21.2
(g) 6.4

Soln.: (a) $0.6 = \frac{6}{10} = \frac{3}{5}$ (b) $2.5 = \frac{25}{10} = \frac{5}{2}$
 (c) $1.0 = \frac{10}{10} = 1$ (d) $3.8 = \frac{38}{10} = \frac{19}{5}$
 (e) $13.7 = \frac{137}{10}$ (f) $21.2 = \frac{212}{10} = \frac{106}{5}$
 (g) $6.4 = \frac{64}{10} = \frac{32}{5}$

6. Express the following as cm using decimals.

- (a) 2 mm (b) 30 mm
 (c) 116 mm (d) 4 cm 2 mm
 (e) 162 mm (f) 83 mm

Soln.: (a) $\therefore 10 \text{ mm} = 1 \text{ cm}$

$\therefore 1 \text{ mm} = \frac{1}{10} \text{ cm}$

$\therefore 2 \text{ mm} = \frac{1}{10} \times 2 \text{ cm} = 0.2 \text{ cm}$

(b) $\therefore 10 \text{ mm} = 1 \text{ cm} \quad \therefore 1 \text{ mm} = \frac{1}{10} \text{ cm}$

$\therefore 30 \text{ mm} = \frac{1}{10} \times 30 \text{ cm} = 3.0 \text{ cm}$

(c) $\therefore 10 \text{ mm} = 1 \text{ cm} \quad \therefore 1 \text{ mm} = \frac{1}{10} \text{ cm}$

$\therefore 116 \text{ mm} = \frac{1}{10} \times 116 \text{ cm} = 11.6 \text{ cm}$

(d) $\therefore 10 \text{ mm} = 1 \text{ cm}$

$\therefore 4 \text{ cm} + \frac{2}{10} \text{ cm} = (4 + 0.2) \text{ cm} = 4.2 \text{ cm}$

(e) $\therefore 10 \text{ mm} = 1 \text{ cm} \quad \therefore 1 \text{ mm} = \frac{1}{10} \text{ cm}$

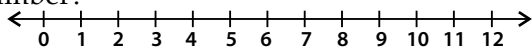
$\therefore 162 \text{ mm} = \frac{1}{10} \times 162 \text{ cm} = 16.2 \text{ cm}$

(f) $\therefore 10 \text{ mm} = 1 \text{ cm} \quad \therefore 1 \text{ mm} = \frac{1}{10} \text{ cm}$

$\therefore 83 \text{ mm} = \frac{1}{10} \times 83 \text{ cm} = 8.3 \text{ cm}$

7. Between which two whole numbers on the number line are the given numbers lie?

Which of these whole numbers is nearer the number?



- (a) 0.8 (b) 5.1
 (c) 2.6 (d) 6.4
 (e) 9.1 (f) 4.9

Soln.: (a) 0.8 lies between 0 and 1. From 0 to 1, 0.8 is nearer to 1.

(b) 5.1 lies between 5 and 6. From 5 to 6, 5.1 is nearer to 5.

(c) 2.6 lies between 2 and 3. From 2 to 3, 2.6 is nearer to 3.

(d) 6.4 lies between 6 and 7. From 6 to 7, 6.4 is nearer to 6.

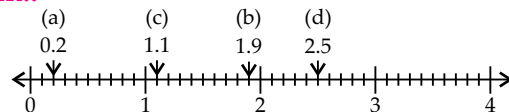
(e) 9.1 lies between 9 and 10. From 9 to 10, 9.1 is nearer to 9.

(f) 4.9 lies between 4 and 5. From 4 to 5, 4.9 is nearer to 5.

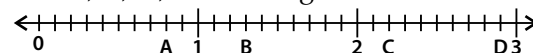
8. Show the following numbers on the number line.

- (a) 0.2 (b) 1.9
 (c) 1.1 (d) 2.5

Soln.:



9. Write the decimal number represented by the points A, B, C, D on the given number line.



Soln.: $A = 0 + \frac{8}{10} = 0.8$, $B = 1 + \frac{3}{10} = 1.3$,

$C = 2 + \frac{2}{10} = 2.2$, $D = 2 + \frac{9}{10} = 2.9$

10. (a) The length of Ramesh's notebook is 9 cm 5 mm. What will be its length in cm?

(b) The length of a young gram plant is 65 mm. Express its length in cm.

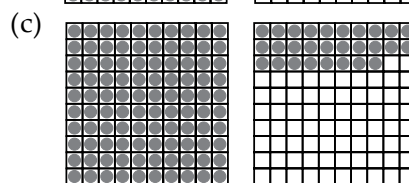
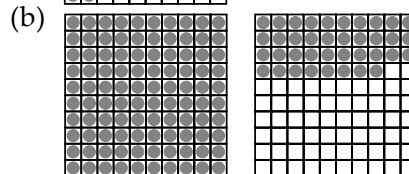
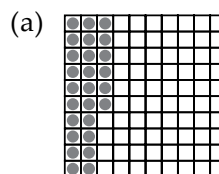
Soln.: (a) $9 \text{ cm } 5 \text{ mm} = 9 \text{ cm} + 5 \text{ mm}$

$= \left(9 + \frac{5}{10}\right) \text{ cm} = 9.5 \text{ cm}$

(b) $65 \text{ mm} = \frac{65}{10} \text{ cm} = 6.5 \text{ cm}$

Exercise 8.2

1. Complete the table with the help of these boxes and use decimals to write the number.



	Ones	Tenths	Hundredths	Number
(a)				
(b)				
(c)				

Soln.:

	Ones	Tenths	Hundredths	Number
(a)	0	2	6	0.26
(b)	1	3	8	1.38
(c)	1	2	8	1.28

2. Write the numbers given in the following place value table in decimal form.

	Hundreds 100	Tens 10	Ones 1	Tenths $\frac{1}{10}$	Hundredths $\left(\frac{1}{100}\right)$	Thousandths $\frac{1}{1000}$
(a)	0	0	3	2	5	0
(b)	1	0	2	6	3	0
(c)	0	3	0	0	2	5
(d)	2	1	1	9	0	2
(e)	0	1	2	2	4	1

Soln.: (a) $0 \times 100 + 0 \times 10 + 3 \times 1 + 2 \times \frac{1}{10} + 5 \times \frac{1}{100} + 0 \times \frac{1}{1000}$
 $= 0 + 0 + 3 + 0.2 + 0.05 + 0 = 3.25$

(b) $1 \times 100 + 0 \times 10 + 2 \times 1 + 6 \times \frac{1}{10} + 3 \times \frac{1}{100} + 0 \times \frac{1}{1000}$
 $= 100 + 0 + 2 + 0.6 + 0.03 + 0 = 102.63$

(c) $0 \times 100 + 3 \times 10 + 0 \times 1 + 0 \times \frac{1}{10} + 2 \times \frac{1}{100} + 5 \times \frac{1}{1000}$
 $= 0 + 30 + 0 + 0 + 0.02 + 0.005 = 30.025$

(d) $2 \times 100 + 1 \times 10 + 1 \times 1 + 9 \times \frac{1}{10} + 0 \times \frac{1}{100} + 2 \times \frac{1}{1000}$
 $= 200 + 10 + 1 + 0.9 + 0 + 0.002 = 211.902$

(e) $0 \times 100 + 1 \times 10 + 2 \times 1 + 2 \times \frac{1}{10} + 4 \times \frac{1}{100} + 1 \times \frac{1}{1000}$
 $= 0 + 10 + 2 + 0.2 + 0.04 + 0.001 = 12.241$

3. Write the following decimals in the place value table.

- (a) 0.29 (b) 2.08
 (c) 19.60 (d) 148.32
 (e) 200.812

Soln.:

		(a)	(b)	(c)	(d)	(e)
Numbers		0.29	2.08	19.60	148.32	200.812
Hundreds	100	0	0	0	1	2
Tens	10	0	0	1	4	0
Ones	1	0	2	9	8	0
Tenths	$\frac{1}{10}$	2	0	6	3	8
Hundredths	$\frac{1}{100}$	9	8	0	2	1
Thousandths	$\frac{1}{1000}$	0	0	0	0	2

4. Write each of the following as decimals.

(a) $20 + 9 + \frac{4}{10} + \frac{1}{100}$

(b) $137 + \frac{5}{100}$ (c) $\frac{7}{10} + \frac{6}{100} + \frac{4}{1000}$

(d) $23 + \frac{2}{10} + \frac{6}{1000}$ (e) $700 + 20 + 5 + \frac{9}{100}$

Soln.: (a) $20 + 9 + 0.4 + 0.01 = 29.41$

(b) $137 + 0.05 = 137.05$

(c) $0.7 + 0.06 + 0.004 = 0.764$

(d) $23 + 0.2 + 0.006 = 23.206$

(e) $700 + 20 + 5 + 0.09 = 725.09$

5. Write each of the following decimals in words.

- (a) 0.03 (b) 1.20
 (c) 108.56 (d) 10.07
 (e) 0.032 (f) 5.008

- Soln.:** (a) Zero point zero three
 (b) One point two zero
 (c) One hundred eight point five six
 (d) Ten point zero seven
 (e) Zero point zero three two
 (f) Five point zero zero eight

6. Between which two numbers in tenths place on the number line does each of the given number lie?

- (a) 0.06 (b) 0.45
 (c) 0.19 (d) 0.66
 (e) 0.92 (f) 0.57

- Soln.:** (a) 0.06 lies between 0 and 0.1.
 (b) 0.45 lies between 0.4 and 0.5.
 (c) 0.19 lies between 0.1 and 0.2.
 (d) 0.66 lies between 0.6 and 0.7.
 (e) 0.92 lies between 0.9 and 1.0.
 (f) 0.57 lies between 0.5 and 0.6.

7. Write as fractions in lowest terms.

- (a) 0.60 (b) 0.05
 (c) 0.75 (d) 0.18
 (e) 0.25 (f) 0.125
 (g) 0.066

Soln.: (a) $0.60 = \frac{60}{100} = \frac{3}{5}$ (b) $0.05 = \frac{5}{100} = \frac{1}{20}$
 (c) $0.75 = \frac{75}{100} = \frac{3}{4}$ (d) $0.18 = \frac{18}{100} = \frac{9}{50}$
 (e) $0.25 = \frac{25}{100} = \frac{1}{4}$ (f) $0.125 = \frac{125}{1000} = \frac{1}{8}$
 (g) $0.066 = \frac{66}{1000} = \frac{33}{500}$

Exercise 8.3

1. Which is greater?

- (a) 0.3 or 0.4 (b) 0.07 or 0.02
 (c) 3 or 0.8 (d) 0.5 or 0.05
 (e) 1.23 or 1.2 (f) 0.099 or 0.19

- (g) 1.5 or 1.50 (h) 1.431 or 1.490
 (i) 3.3 or 3.300 (j) 5.64 or 5.603

Soln.: Before comparing, we write both terms in like decimals :

- (a) $0.3 < 0.4$
 (b) $0.07 > 0.02$
 (c) $3.0 \text{ or } 0.8 \Rightarrow 3.0 > 0.8$
 (d) $0.50 \text{ or } 0.05 \Rightarrow 0.50 > 0.05$
 (e) $1.23 \text{ or } 1.20 \Rightarrow 1.23 > 1.20$
 (f) $0.099 \text{ or } 0.190 \Rightarrow 0.099 < 0.190$
 (g) $1.50 \text{ or } 1.50 \Rightarrow 1.50 = 1.50$
 (h) $1.431 < 1.490$
 (i) $3.300 \text{ or } 3.300 \Rightarrow 3.300 = 3.300$
 (j) $5.640 \text{ or } 5.603 \Rightarrow 5.640 > 5.603$

2. Make five more examples and find the greater number from them.

Soln.: Five examples are :

- (i) 1.8 or 1.82 (ii) 1.0009 or 1.09
 (iii) 10.01 or 100.1 (iv) 5.1 or 5.01
 (v) 4.213 or 421.3

Before comparing, we write both terms in like decimals

- (i) $1.80 \text{ or } 1.82 \Rightarrow 1.82$ is greater than 1.8
 (ii) $1.0009 \text{ or } 1.0900 \Rightarrow 1.09$ is greater than 1.0009
 (iii) $10.01 \text{ or } 100.10 \Rightarrow 100.1$ is greater than 10.01
 (iv) $5.10 \text{ or } 5.01 \Rightarrow 5.1$ is greater than 5.01
 (v) $4.213 \text{ or } 421.300 \Rightarrow 421.3$ is greater than 4.213

Exercise 8.4

1. Express as rupees using decimals.

- (a) 5 paise (b) 75 paise
 (c) 20 paise (d) 50 rupees 90 paise
 (e) 725 paise

Soln.: (a) $\therefore 1 \text{ paise} = \text{Rs. } \frac{1}{100}$

$$\therefore 5 \text{ paise} = \text{Rs. } \left(\frac{1}{100} \times 5 \right) = \text{Rs. } 0.05$$

(b) $\therefore 1 \text{ paise} = \text{Rs. } \frac{1}{100}$

$$\therefore 75 \text{ paise} = \text{Rs. } \left(\frac{1}{100} \times 75 \right) = \text{Rs. } 0.75$$

(c) $\therefore 1 \text{ paise} = \text{Rs. } \frac{1}{100}$

$$\therefore 20 \text{ paise} = \text{Rs. } \left(\frac{1}{100} \times 20 \right) = \text{Rs. } 0.20$$

(d) $\therefore 1 \text{ paise} = \text{Rs. } \frac{1}{100}$

$$\therefore \text{Rs. } 50 + 90 \text{ paise} = \text{Rs. } \left(50 + \frac{1}{100} \times 90 \right) = \text{Rs. } 50.90$$

(e) $\therefore 1 \text{ paise} = \text{Rs. } \frac{1}{100}$

$$\therefore 725 \text{ paise} = \text{Rs. } \left(\frac{1}{100} \times 725 \right) = \frac{725}{100} = \text{Rs. } 7.25$$

2. Express as metres using decimals.

- (a) 15 cm (b) 6 cm
 (c) 2 m 45 cm (d) 9 m 7 cm
 (e) 419 cm

Soln.: (a) $\therefore 1 \text{ cm} = \frac{1}{100} \text{ m}$

$$\therefore 15 \text{ cm} = \frac{1}{100} \times 15 \text{ m} = 0.15 \text{ m}$$

(b) $\therefore 1 \text{ cm} = \frac{1}{100} \text{ m}$

$$\therefore 6 \text{ cm} = \frac{1}{100} \times 6 \text{ m} = 0.06 \text{ m}$$

(c) $\therefore 1 \text{ cm} = \frac{1}{100} \text{ m}$

$$\therefore 2 \text{ m } 45 \text{ cm} = \left(2 + \frac{1}{100} \times 45 \right) \text{ m} = 2.45 \text{ m}$$

(d) $\therefore 1 \text{ cm} = \frac{1}{100} \text{ m}$

$$\therefore 9 \text{ m } 7 \text{ cm} = \left(9 + \frac{1}{100} \times 7 \right) \text{ m} = 9.07 \text{ m}$$

(e) $\therefore 1 \text{ cm} = \frac{1}{100} \text{ m}$

$$\therefore 419 \text{ cm} = \frac{1}{100} \times 419 \text{ m} = \frac{419}{100} = 4.19 \text{ m}$$

3. Express as cm using decimals.

- (a) 5 mm (b) 60 mm
 (c) 164 mm (d) 9 cm 8 mm
 (e) 93 mm

Soln.: (a) $\therefore 1 \text{ mm} = \frac{1}{10} \text{ cm}$

$$\therefore 5 \text{ mm} = \frac{1}{10} \times 5 \text{ cm} = 0.5 \text{ cm}$$

(b) $\therefore 1 \text{ mm} = \frac{1}{10} \text{ cm}$

$$\therefore 60 \text{ mm} = \frac{1}{10} \times 60 \text{ cm} = 6.0 \text{ cm}$$

(c) $\therefore 1 \text{ mm} = \frac{1}{10} \text{ cm}$

$$\therefore 164 \text{ mm} = \frac{1}{10} \times 164 \text{ cm} = 16.4 \text{ cm}$$

(d) $\therefore 1 \text{ mm} = \frac{1}{10} \text{ cm}$

$$\therefore 9 \text{ cm } 8 \text{ mm} = \left(9 + \frac{1}{10} \times 8 \right) \text{ cm} = 9.8 \text{ cm}$$

(e) $\therefore 1 \text{ mm} = \frac{1}{10} \text{ cm}$

$$\therefore 93 \text{ mm} = \frac{1}{10} \times 93 \text{ cm} = 9.3 \text{ cm}$$

4. Express as km using decimals.

- (a) 8 m (b) 88 m
 (c) 8888 m (d) 70 km 5 m

Soln.: (a) $\therefore 1 \text{ m} = \frac{1}{1000} \text{ km}$

$\therefore 8 \text{ m} = \frac{1}{1000} \times 8 \text{ km} = 0.008 \text{ km}$

(b) $\therefore 1 \text{ m} = \frac{1}{1000} \text{ km}$

$\therefore 88 \text{ m} = \frac{1}{1000} \times 88 \text{ km} = 0.088 \text{ km}$

(c) $\therefore 1 \text{ m} = \frac{1}{1000} \text{ km}$

$\therefore 8888 \text{ m} = \frac{1}{1000} \times 8888 \text{ km} = 8.888 \text{ km}$

(d) $\therefore 1 \text{ m} = \frac{1}{1000} \text{ km}$

$\therefore 70 \text{ km } 5 \text{ m} = \left(70 + \frac{1}{1000} \times 5\right) \text{ km} = 70.005 \text{ km}$

5. Express as kg using decimals.

(a) 2 g (b) 100 g

(c) 3750 g (d) 5 kg 8 g

(e) 26 kg 50 g

Soln.: (a) $\therefore 1 \text{ g} = \frac{1}{1000} \text{ kg}$

$\therefore 2 \text{ g} = \frac{1}{1000} \times 2 \text{ kg} = 0.002 \text{ kg}$

(b) $\therefore 1 \text{ g} = \frac{1}{1000} \text{ kg}$

$\therefore 100 \text{ g} = \frac{1}{1000} \times 100 \text{ kg} = 0.1 \text{ kg}$

(c) $\therefore 1 \text{ g} = \frac{1}{1000} \text{ kg}$

$\therefore 3750 \text{ g} = \frac{1}{1000} \times 3750 \text{ kg} = 3.750 \text{ kg}$

(d) $\therefore 1 \text{ g} = \frac{1}{1000} \text{ kg}$

$\therefore 5 \text{ kg } 8 \text{ g} = \left(5 + \frac{1}{1000} \times 8\right) \text{ kg} = 5.008 \text{ kg}$

(e) $\therefore 1 \text{ g} = \frac{1}{1000} \text{ kg}$

$\therefore 26 \text{ kg } 50 \text{ g} = \left(26 + \frac{1}{1000} \times 50\right) \text{ kg} = 26.050 \text{ kg}$

Exercise 8.5

1. Find the sum in each of the following :

(a) $0.007 + 8.5 + 30.08$

(b) $15 + 0.632 + 13.8$

(c) $27.076 + 0.55 + 0.004$

(d) $25.65 + 9.005 + 3.7$

(e) $0.75 + 10.425 + 2$

(f) $280.69 + 25.2 + 38$

Soln.: (a) 0.007 (b) 15.000

8.500 0.632

+ 30.080 + 13.800

38.587 29.432

(c) 27.076

0.550

+ 0.004

27.630

(e) 0.750

10.425

+ 2.000

13.175

(d) 25.650

9.005

+ 3.700

38.355

(f) 280.69

25.20

+ 38.00

343.89

2. Rashid spent Rs. 35.75 for Maths book and Rs. 32.60 for Science book. Find the total amount spent by Rashid.

Soln.: Money spent for Maths book = Rs. 35.75

Money spent for Science book = Rs. 32.60

Total money spent = Rs. 35.75 + Rs. 32.60
= Rs. 68.35

Therefore, total money spent by Rashid is Rs. 68.35.

3. Radhika's mother gave her Rs. 10.50 and her father gave her Rs. 15.80, find the total amount given to Radhika by the parents.

Soln.: Money given by mother = Rs. 10.50

Money given by father = Rs. 15.80

Total money received by Radhika

= Rs. 10.50 + Rs. 15.80 = Rs. 26.30

Therefore, total money received by Radhika is Rs. 26.30.

4. Nasreen bought 3 m 20 cm cloth for her shirt and 2 m 5 cm cloth for her trouser. Find the total length of cloth bought by her.

Soln.: Cloth bought for shirt = 3 m 20 cm
= 3.20 m

Cloth bought for trouser = 2 m 5 cm = 2.05 m

Total length of cloth bought by Nasreen

= 3.20 m + 2.05 m = 5.25 m

Therefore, total length of cloth bought by Nasreen is 5.25 m.

5. Naresh walked 2 km 35 m in the morning and 1 km 7 m in the evening. How much distance did he walk in all?

Soln.: Distance travelled in the morning

= 2 km 35 m = 2.035 km

Distance travelled in the evening

= 1 km 7 m = 1.007 km

Total distance travelled

= (2.035 + 1.007) km = 3.042 km

Therefore, total distance travelled by Naresh is 3.042 km.

6. Sunita travelled 15 km 268 m by bus, 7 km 7 m by car and 500 m on foot in order to reach her school. How far is her school from her residence?

Soln.: Distance travelled by bus = 15 km 268 m
= 15.268 km

Distance travelled by car = 7 km 7 m
= 7.007 km

Distance travelled on foot = 500 m
= 0.500 km

Total distance travelled
= (15.268 + 7.007 + 0.500) km = 22.775 km

Therefore, total distance travelled by Sunita is 22.775 km.

7. Ravi purchased 5 kg 400 g rice, 2 kg 20 g sugar and 10 kg 850 g flour. Find the total weight of his purchases.

Soln.: Weight of rice = 5 kg 400 g = 5.400 kg

Weight of sugar = 2 kg 20 g = 2.020 kg

Weight of flour = 10 kg 850 g = 10.850 kg

Total weight = (5.400 + 2.020 + 10.850) kg
= 18.270 kg

Therefore, total weight of Ravi's purchases is 18.270 kg.

Exercise 8.6

1. Subtract :

(a) Rs. 18.25 from Rs. 20.75

(b) 202.54 m from 250 m

(c) Rs. 5.36 from Rs. 8.40

(d) 2.051 km from 5.206 km

(e) 0.314 kg from 2.107 kg

Soln.: (a) 20.75

$$\begin{array}{r} 20.75 \\ -18.25 \\ \hline 02.50 \end{array}$$

∴ Rs. 20.75 – Rs. 18.25 = Rs. 2.50

(b) 250.00

$$\begin{array}{r} 250.00 \\ -202.54 \\ \hline 47.46 \end{array}$$

∴ 250 m – 202.54 m = 47.46 m

(c) 8.40

$$\begin{array}{r} 8.40 \\ -5.36 \\ \hline 3.04 \end{array}$$

∴ Rs. 8.40 – Rs. 5.36 = Rs. 3.04

(d) 5.206

$$\begin{array}{r} 5.206 \\ -2.051 \\ \hline 3.155 \end{array}$$

∴ 5.206 km – 2.051 km = 3.155 km

(e) 2.107

$$\begin{array}{r} 2.107 \\ -0.314 \\ \hline 1.793 \end{array}$$

∴ 2.107 kg – 0.314 kg = 1.793 kg

2. Find the value of :

(a) 9.756 – 6.28

(b) 21.05 – 15.27

(c) 18.5 – 6.79

(d) 11.6 – 9.847

Soln.: (a) 9.756

$$\begin{array}{r} 9.756 \\ -6.28 \\ \hline 3.476 \end{array}$$

(b) 21.05

$$\begin{array}{r} 21.05 \\ -15.27 \\ \hline 05.78 \end{array}$$

(c) 18.50

$$\begin{array}{r} 18.50 \\ -6.79 \\ \hline 11.71 \end{array}$$

(d) 11.600

$$\begin{array}{r} 11.600 \\ -9.847 \\ \hline 1.753 \end{array}$$

3. Raju bought a book for Rs. 35.65. He gave Rs. 50 to the shopkeeper. How much money did he get back from the shopkeeper?

Soln.: Total amount given to shopkeeper = Rs. 50

Cost of book = Rs. 35.65

Amount left = Rs. 50.00 – Rs. 35.65 = Rs. 14.35

Therefore, Raju got back Rs. 14.35 from the shopkeeper.

4. Rani had Rs. 18.50. She bought one ice-cream for Rs. 11.75. How much money does she have now?

Soln.: Total money = Rs. 18.50

Cost of ice-cream = Rs. 11.75

Amount left = Rs. 18.50 – Rs. 11.75 = Rs. 6.75

Therefore, Rani has Rs. 6.75 now.

5. Tina had 20 m 5 cm long cloth. She cuts 4 m 50 cm length of cloth from this for making a curtain. How much cloth is left with her?

Soln.: Total length of cloth = 20 m 5 cm
= 20.05 m

Length of cloth used = 4 m 50 cm = 4.50 m

Remaining cloth = 20.05 m – 4.50 m = 15.55 m

Therefore, 15.55 m of cloth is left with Tina.

6. Namita travels 20 km 50 m every day. Out of this she travels 10 km 200 m by bus and the rest by auto. How much distance does she travel by auto?

Soln.: Total distance travelled = 20 km 50 m
= 20.050 km

Distance travelled by bus = 10 km 200 m
= 10.200 km

Distance travelled by auto

= (20.050 – 10.200) km = 9.850 km

Therefore, 9.850 km distance is travelled by auto.

7. Aakash bought vegetables weighing 10 kg. Out of this, 3 kg 500 g is onions, 2 kg 75 g is tomatoes and the rest is potatoes. What is the weight of the potatoes?

Soln.: Weight of onions = 3 kg 500 g = 3.500 kg

Weight of tomatoes = 2 kg 75 g = 2.075 kg

Total weight of onions and tomatoes

= (3.500 + 2.075) kg = 5.575 kg

Therefore, weight of potatoes

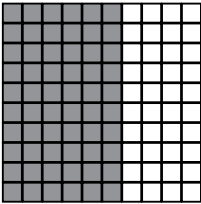
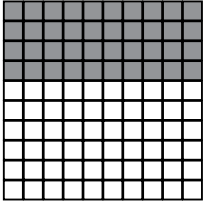
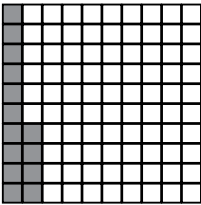
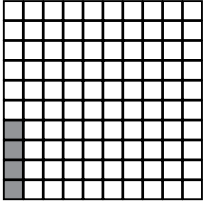
= (10.000 – 5.575) kg = 4.425 kg

Thus, weight of potatoes is 4.425 kg.

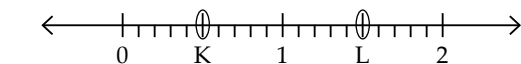
EXERCISE

Multiple Choice Questions

Level - 1

1. The decimal form of $\frac{6708}{100}$ is _____.
 (a) 67.08 (b) 670.8
 (c) 6.708 (d) 670
2. The lowest form of 0.45 is _____.
 (a) $\frac{45}{100}$ (b) $\frac{9}{20}$
 (c) $\frac{5}{20}$ (d) $\frac{3}{20}$
3. Two tens and six tenths is expressed in decimals as _____.
 (a) 2.6 (b) 2.06 (c) 20.6 (d) 26.0
4. The fraction form of 6.25 is _____.
 (a) $\frac{625}{10}$ (b) $\frac{625}{100}$
 (c) $\frac{125}{4}$ (d) $\frac{25}{2}$
5. Which model shows 0.04 shaded?
 (a)  (b) 
 (c)  (d) 
6. Express 80 mm in cm as _____.
 (a) 0.8 cm (b) 80 cm
 (c) 800 cm (d) 8 cm
7. The decimal form of $\frac{25}{4}$ is _____.
 (a) 62.5 (b) 0.625
 (c) 6.25 (d) 0.25
8. The sum of $609.20 + 16.3 + 42$ is _____.
 (a) 660.5 (b) 667.5
 (c) 669.5 (d) 670.5
9. Find the value of $10 + 0 + \frac{9}{100} + \frac{5}{1000}$.
 (a) 10.905 (b) 10.95
 (c) 10.095 (d) 1.095
10. In 16.532, the digit 3 is in which place?
 (a) Tenths (b) Hundredths
 (c) Hundreds (d) Thousands
11. How many hundredths are there in 4 tenths?
 (a) 400 (b) 40 (c) $\frac{1}{40}$ (d) 4
12. Anusha has three pieces of ribbons. One piece is 43.75 m long, another 82.6 m long and the third is 63.25 m long. What is the total length of the three pieces of ribbon?
 (a) 189.60 m (b) 204.40 m
 (c) 174.60 m (d) 196.40 m
13. The expanded form of 28.001 is _____.
 (a) $20 + 8 + \frac{1}{10}$ (b) $20 + 8 + \frac{1}{1000}$
 (c) $20 + 8 + \frac{1}{100}$ (d) $20 + \frac{8}{10} + \frac{1}{100}$
14. Which statement is true?
 (a) $5.69 < 5.6$ (b) $10.61 > 10.602$
 (c) $11.112 < 2.112$ (d) $12.55 > 12.555$
15. $2\frac{1}{25}$ expressed as a decimal is _____.
 (a) 1.25 (b) 2.4 (c) 2.5 (d) 2.04
16. Which decimal number is greater than $\frac{3}{4}$?
 (a) 0.85 (b) 0.5 (c) 0.69 (d) 0.75
17. The place value of '7' in 32.507 is _____.
 (a) Hundredths (b) Tenths
 (c) Thousandths (d) Thousands
18. The value of $(1 + 0.1 + 0.01 + 0.001)$ is _____.
 (a) 1.001 (b) 1.111 (c) 0.111 (d) 1.011
19. A man has a hundred rupee note. He bought vegetables for ₹ 26.75 and fruits for ₹ 25.45. How much money he has left?
 (a) ₹ 47.80 (b) ₹ 52.40
 (c) ₹ 73.25 (d) ₹ 37.80

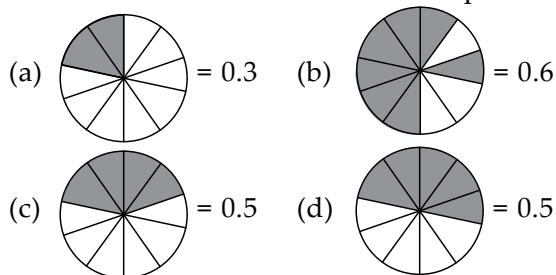
20. The largest among 54.32, 54.35, 54.23, and 5.23 is _____.
 (a) 54.32 (b) 54.23 (c) 54.35 (d) 5.23
21. $43.266 - 24.557 + 34.970$ is simplified as _____.
 (a) 53.769 (b) 53.679
 (c) 753.679 (d) 102.793
22. What is the sum of 6 mm, 60 m and 60 cm?
 (a) 6600.6 cm (b) 6000.6 cm
 (c) 6060.6 cm (d) 6666 cm
23. Which is the fraction not equivalent to 1.670?
 (a) $\frac{167}{100}$ (b) $\frac{1670}{1000}$ (c) $\frac{16.7}{10}$ (d) 16.7
24. Subtracting 8 km 73 m from 15 km 160 m, we get _____.
 (a) 7.078 km (b) 0.087 km
 (c) 23.233 km (d) 7.087 km



- (a) 0.5, 1.5 (b) 1.5, 1.5
 (c) 0.12, 0.5 (d) 1.5, 2.5

Level - 2

26. Which of the following set of decimals are arranged in ascending order?
 (a) 2.910, 2.019, 2.109, 2.119
 (b) 2.910, 2.119, 2.109, 2.019
 (c) 2.019, 2.109, 2.119, 2.910
 (d) 2.119, 2.109, 2.019, 2.910
27. Pushkar purchased a chocolate for ₹ 12.50, a pastry for ₹ 5.75 and a packet of chips for ₹ 8.38. How much money did he spend in all?
 (a) ₹ 27.1 (b) ₹ 26.63
 (c) ₹ 28.63 (d) ₹ 20
28. Select the correct match of shaded portion.



29. Find the value of
 (i) $17.432 - 12.876 + 82.49 - 51.905$
 (ii) $39.2186 + 23.543 - 82.432 + 90.625$
 (iii) $69.3875 - 37.483 - 28.515 + 38.75$
 (i) (ii) (iii)
 (a) 42.645 80.1955 42.1395
 (b) 35.141 80.1955 35.4325
 (c) 42.645 70.9546 35.4325
 (d) 35.141 70.9546 42.1395
30. The corner store sells 129.91 litres of milk on Thursday and 11.32 litres more than this quantity on Friday. The following day, 18.94 litres less milk were sold than on Friday. How many litres of milk did they sell on Saturday?
 (a) 160.17 litres (b) 137.53 litres
 (c) 122.29 litres (d) 99.65 litres

Fill in the Blanks

- 0.15 can be written in words as _____.
- $16.8 + 4.83 - 10.94 =$ _____.
- A bag contains 75.50 kg of rice, another bag contains 15.75 kg of rice. The total weight of the rice is _____ kg.
- The difference of place values of 3 in 32.53 is _____.
- Difference of 30 and 15.45 is _____.
- Express 1111 m in cm as _____.
- $54.904 = 5 \times 10 + 4 + 9 \times \frac{1}{\square} + 4 \times \frac{1}{\square}$
- $\frac{1}{2}$ is _____ than 0.01.
- _____ separates whole number and fractional part of a decimal number.
- 6.42 and 18.45 are _____ decimals.

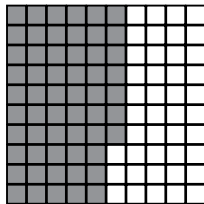
True or False

- 2.10 and 2.100 are not equivalent decimals.
- The expanded form of 2.06 is $(2 \times 1) + \left[6 \times \frac{1}{100} \right]$.
- The place value of 9 in the decimal 627.598 is thousandths.
- $12\frac{8}{10}$ is expressed in decimal as 12.08.
- The weight of an empty gas cylinder is 18 kg 75 g. The weight of the gas contained in it is 12 kg

350 g. The total weight of the cylinder filled with gas is 30 kg 420 g.

6. Decimals cannot be represented on the number line.
7. Numbers written in the decimal form are called whole numbers.

8. The decimal form of $\frac{2}{4}$ is 0.06.



9. The shaded part of shows 0.57.

10. 15.213 is greater than 15.012.

Match the Following

In this section, each question has two matching lists. Choices for the correct combination of elements from List-I and List-II are given as options (a), (b), (c) and (d) out of which one is correct.

1. Match the following.

List-I

- (P) 2.220
(Q) 2.022
(R) 2.020
(S) 20.202

List-II

1. $2 + \frac{2}{100}$
2. $2 + \frac{2}{10} + \frac{2}{100}$
3. $20 + \frac{2}{10} + \frac{2}{1000}$
4. $2 + \frac{2}{100} + \frac{2}{1000}$

Code:

- | | P | Q | R | S |
|-----|---|---|---|---|
| (a) | 4 | 2 | 3 | 1 |
| (b) | 4 | 2 | 1 | 3 |
| (c) | 2 | 4 | 3 | 1 |
| (d) | 2 | 4 | 1 | 3 |

2. Match the following.

List-I

- (P) $\frac{2}{5}$
(Q) $\frac{3}{4}$
(R) $\frac{7}{10}$
(S) $\frac{1}{4}$

List-II

1. 0.70
2. 0.25
3. 0.40
4. 0.75

Code:

- | | P | Q | R | S |
|-----|---|---|---|---|
| (a) | 4 | 3 | 2 | 1 |
| (b) | 3 | 4 | 1 | 2 |
| (c) | 1 | 2 | 3 | 4 |
| (d) | 3 | 1 | 4 | 2 |

3. Match the following.

List-I

- (P) The snowfall during three winter months was 30.5 cm, 45.25 cm, and 25.25 cm. Then the total snowfall in these three months is (in cm)
(Q) Kritika's weight is 35 kg 75 gm and her sister Khushi's weight is 27 kg 980 gm. Kritika is heavier by (in kg)?
(R) Naresh drive 42 km 35 m in the morning and 25 km 7 m in the evening. The distance he drive in all (in km) is
(S) Anu has ₹ 218.50. She bought some ice-creams for ₹ 205.75. The money she have now (in ₹) is

List-II

1. 7.095
2. 12.75
3. 101
4. 67.042

Code:

- | | P | Q | R | S |
|-----|---|---|---|---|
| (a) | 1 | 3 | 2 | 4 |
| (b) | 3 | 1 | 2 | 4 |
| (c) | 3 | 1 | 4 | 2 |
| (d) | 1 | 3 | 4 | 2 |

Assertion & Reason Type

Directions: In each of the following questions, a statement of Assertion (A) is given followed by a corresponding statement of Reason (R) just below it. Of the statement, mark the correct answer as

- (a) If both assertion and reason are true and reason is the correct explanation of assertion.
(b) If both assertion and reason are true but reason is not the correct explanation of assertion.
(c) If assertion is true but reason is false.
(d) If assertion is false but reason is true.

1. **Assertion** : 0.7, 0.70, 0.700 are the equivalent decimals.

Reason : Number of zero at the end of decimal number change the value of the number.

2. **Assertion** : The fraction form of 16.25 is $\frac{1625}{100}$.

Reason : In the denominator, write 1 followed by as many zeroes as there are decimal place in the given decimal.

3. **Assertion** : The number 211.902 is expressed in expanded form as $2 \times 100 + 1 \times 10 + 1 + 9 \times \frac{1}{10} + 2 \times \frac{1}{100}$.

Reason : As we go from left to right, the multiplying factor becomes $\frac{1}{10}$ of the previous factor.

4. **Assertion** : The sum of 27.8, 175.09 and 685.7 is 888.59

Reason : To subtract decimal numbers column wise, we place them correctly in the place value table and subtract them in the same way as of whole numbers.

5. **Assertion** : Expressing 735 m into km is 735000 km.

Reason : $1 \text{ m} = \frac{1}{1000} \text{ km}$

Comprehension Type

PASSAGE 1 : To change a decimal numeral to a common fraction, express the decimal as a fraction with denominator 10, 100, 1000 and then reduce it to its lowest term.

- The sum of 67.25, 5.5, 9.85 in fraction form is
 (a) $\frac{826}{100}$ (b) $\frac{826}{10}$
 (c) 826 (d) $\frac{820}{100}$
- Amit bought a comic book for ₹ 45.60 and a magazine for ₹ 70.00. What is the total amount spent by Amit (Express in lowest fractional form).
 (a) $\frac{102}{5}$ (b) $\frac{156}{2}$
 (c) $\frac{578}{5}$ (d) $\frac{1156}{5}$
- Convert 19.07 kg in grams.
 (a) 19070 g (b) $\frac{1907}{10}$ g
 (c) 1907 g (d) None of these

PASSAGE 2 : A squash ball weighs 3400 mg, a cricket ball weighs 45 g, a basketball weighs 0.65 kg and a football weighs 3 kg.

- Which sports ball is lighter in weight?
 (a) Cricket ball (b) Football
 (c) Squash ball (d) Basketball

- What is the weight (in kg) of basketball and football?

(a) 0.365 kg (b) 3.65 kg
 (c) 365 kg (d) 3 kg

- What is the total weight of all the balls in mg?

(a) 3729 mg (b) 3.729 mg
 (c) 3729000 mg (d) 0.3729 mg

Subjective Problems

Very Short Answer Type

- Write $\frac{5}{1000}$ in decimal form.
- 0.123 or 0.125, which is greater?
- What is the sum of 12.17, 7.83 and 16.2?
- Express 46 rupees 87 paise as rupees using decimals.
- Subtract 0.25 from 0.37.
- Express $6 \times \frac{1}{10} + 8 \times \frac{1}{100}$ as a decimal.
- Simplify : $6 - 0.4 - 0.87$.
- Write $3\frac{1}{5}$ as a decimal.
- Show 1.8 on the number line.
- Write in order from least to the greatest: 2.1, 2.105, 2.011.

Short Answer Type

- Write the following numbers in the place value table and write their number names.
 (a) 18.5 (b) 125.31
- Arrange the following decimals in descending order: 8.88, 8.088, 88.8, 88.08, 8.008
- Write the following decimals in expanded form.
 (a) 412.607 (b) 1243.26
- Find the sum of 40 rupees 80 paise and 95 rupees 50 paise.
- Ramesh and Rahul walked back to their homes by walking 3.2 km and 3.58 km respectively. Who walked more distance and by how much?
- Simplify: $3.23 + 29.375 + 81.2016 + 0.3376$
- A man purchases an almirah for ₹ 3675, gives ₹ 172.50 as its cartage and spends ₹ 64.80 on its repair. How much does the almirah cost him?

8. The height of Jyoti and Geetanjali is 1.59 m and 0.94 m, respectively. How much shorter is Geetanjali than Jyoti?
9. Simplify: $53.5 - 34.68 + 64.75 - 28.9$.
10. From a ribbon of length 15 m, two pieces of 7 m and 6.5 m were cut. Find the remaining part of length.

Long Answer Type

1. Rahim, Ravinder and Rohit bought 8.5 litres, 7.25 litres and 9.4 litres milk respectively from a milk booth. How much milk did they buy in all? If there was 30 litres of milk in booth, find the quantity of milk left.
2. Simplify: (i) $(81.61 - 41.4135) - (503.37 + 253)$
(ii) $91.469 + 39.65 - 57.255 + 14.50$
(iii) $23.667 - 2.55 - 19.205 + 80.432$
3. Rajendra purchased 6 kg 25 g of fruits and 4 kg 355 g of vegetables and put them in a bag. If this bag with these contents weighs 11 kg, find the weight of the empty bag.
4. The distance between Raj's house and his office is 16 km. He covers 11 km 35 m by car, 3 km 75 m by bus and the rest on foot. How much distance does he cover by walking?
5. How many numbers with 2 decimal places between 2.5 and 3 contain the digit 7. What is the

difference of first seven numbers from last seven numbers?

Integer Type Questions

In this section, each question, when worked out will result in one integer from 0 to 9 (both inclusive).

1. What is the decimal part of the sum if we add 8.3 and 5.6?
2. What is the hundredth part of the decimal number 5.04?
3. What is the sum of the digits of the product of the sum and the difference of 4.5 and 2.5?
4. How many zeroes followed by 1 if we express 8 gm into kg?
5. What is the whole number part in sum of $3 + 0.4 + 0.01 + 0.001$?
6. The height of Sonu is 1.25 m and that of Reena is 1.3 m. How much is Reena taller than Sonu (in cm)?
7. Subtract 2.5 from 8.5, what will we get?
8. Write the numerator of decimal form 0.05 expressed in fractional form?
9. What is the tenth place value if we add 13.5 and 1.57?
10. What is the value of P for $0.04 = \frac{P}{25}$?





CHAPTER 8

Decimals

Multiple Choice Questions

1. (a): Decimal form of $\frac{6708}{100} = 67.08$

2. (b): $0.45 = \frac{45}{100} = \frac{9}{20}$

3. (c): Two tens and six tenths $= 2 \times 10 + 6 \times \frac{1}{10} = 20.6$.

4. (b): $6.25 = \frac{6.25}{1} \times \frac{100}{100} = \frac{625}{100}$

5. (d): (a) 60 parts are shaded out of 100 parts
i.e., $\frac{60}{100} = 0.6$

(b) 40 parts are shaded out of 100 parts
i.e., $\frac{40}{100} = 0.4$

(c) 14 parts are shaded out of 100 parts
i.e., $\frac{14}{100} = 0.14$

(d) 4 parts are shaded out of 100 parts
i.e., $\frac{4}{100} = 0.04$

6. (d): As $1 \text{ mm} = \frac{1}{10} \text{ cm}$
 $80 \text{ mm} = \frac{80}{10} = 8 \text{ cm}$

7. (c): $\frac{25}{4} = \frac{25 \times 25}{4 \times 25} = \frac{625}{100} = 6.25$

8. (b):
$$\begin{array}{r} 609.20 \\ 16.30 \\ + 42.00 \\ \hline 667.50 \end{array}$$

9. (c): We have 10 tens, 9 hundredths and 5 thousandths $= 10.095$

10. (b): The expanded form of 16.532 is
 $1 \times 10 + 6 \times 1 + 5 \times \frac{1}{10} + 3 \times \frac{1}{100} + 2 \times \frac{1}{1000}$
Here, 3 is in the hundredth place.

11. (b): As 1 tenths = 10 hundredths
 $\therefore 4 \text{ tenths} = 40 \text{ hundredths}$

12. (a): Length of first piece of ribbon = 43.75 m
Length of second piece of ribbon = 82.6 m
Length of third piece of ribbon = 63.25 m
Total length of three pieces of ribbon
 $= (43.75 + 82.6 + 63.25) \text{ m} = 189.6 \text{ m}$

13. (b): $28.001 = 2 \times 10 + 8 \times 1 + 1 \times \frac{1}{1000}$
 $= 20 + 8 + \frac{1}{1000}$

14. (b): (a) We have, $5.69 < 5.6$
but $5.69 > 5.60$ (as hundredths part, $9 > 0$),
So, (a) is incorrect.

(b) We have, $10.610 > 10.602$.
So, (b) is correct.

(c) We have, $11.112 < 2.112$ but $11.112 > 2.112$
(as whole part, $11 > 2$)
So, (c) is incorrect.

(d) We have, $12.55 > 12.555$
but $12.555 > 12.550$ (as thousandths part, $5 > 0$)
So, (d) is incorrect.

15. (d): $2\frac{1}{25} = 2 + \frac{1}{25}$

To make the denominator 100, multiply 25 by 4

$$\begin{aligned} \therefore 2 + \frac{1}{25} &= 2 + \frac{1 \times 4}{25 \times 4} \\ &= \frac{2 \times 100}{100} + \frac{4}{100} = \frac{200 + 4}{100} = \frac{204}{100} = 2.04 \end{aligned}$$

16. (a): As $\frac{3}{4} = \frac{3 \times 25}{4 \times 25} = \frac{75}{100} = 0.75$

[To make the denominator 100, multiply by 25]
0.85 is greater than 0.75.

$$17. (c): 32.507 = 3 \times 10 + 2 \times 1 + 5 \times \frac{1}{10} + 7 \times \frac{1}{1000}$$

$$= 30 + 2 + \frac{5}{10} + \frac{7}{1000}$$

\therefore Place value of 7 in 32.507 is thousandths.

18. (b): Converting all decimal numbers into like decimals

$$1.000 + 0.100 + 0.010 + 0.001 = 1.111$$

19. (a): Money spent on vegetables = ₹ 26.75

Money spent on fruits = ₹ 25.45

Total money = ₹ 100

Money left = ₹ 100 – ₹ (26.75 + 25.45)

$$= ₹ 100 - ₹ 52.20$$

$$= ₹ 47.80$$

20. (c): Clearly, $54.35 > 54.32 > 54.23 > 5.23$

The largest decimal number is 54.35.

21. (b): $43.266 + 34.970 - 24.557 = 53.679$

$$\begin{array}{r} 43.266 \\ + 34.970 \\ \hline 78.236 \end{array} \quad \begin{array}{r} 78.236 \\ - 24.557 \\ \hline 53.679 \end{array}$$

22. (c): Converting the given quantities into cm

$$\text{As } 1 \text{ mm} = \frac{1}{10} \text{ cm}$$

$$6 \text{ mm} = \frac{6}{10} \text{ cm} = 0.6 \text{ cm}$$

and $1 \text{ m} = 100 \text{ cm}$

$$60 \text{ m} = 6000 \text{ cm}$$

$$\therefore 6 \text{ mm} + 60 \text{ m} + 60 \text{ cm} = 0.6 \text{ cm} + 6000 \text{ cm} + 60 \text{ cm} = 6,060.6 \text{ cm}$$

23. (d): We have, $1.670 = \frac{1670}{1000} = \frac{167}{100} = \frac{16.7}{10}$

16.7 is not equivalent to 1.670.

24. (d): Converting the given quantities into km

$$\text{As } 1 \text{ m} = \frac{1}{1000} \text{ km}$$

$$73 \text{ m} = \frac{73}{1000} \text{ km} = 0.073 \text{ km}$$

$$\therefore 8 \text{ km } 73 \text{ m} = 8 \text{ km} + 0.073 \text{ km} = 8.073 \text{ km}$$

$$\text{Also, } 15 \text{ km } 160 \text{ m} = 15 \text{ km} + \frac{160}{1000} \text{ km}$$

$$= 15 \text{ km} + 0.160 \text{ km} = 15.160 \text{ km}$$

$$\text{Their difference} = (15.160 - 8.073) \text{ km}$$

$$= 7.087 \text{ km}$$

25. (a): Point K represents 0.5

and point L represents 1.5.

26. (c): We have, 2.910, 2.019, 2.109, 2.119

As whole part of all the decimal numbers is same i.e., 2.

Come to the tenths place, 2.019 is the smallest and 2.910 is the largest.

In 2.109 and 2.119, digits at hundredths place are 0 and 1 respectively.

$$\therefore 2.019 < 2.109 < 2.119 < 2.910$$

\therefore (c) is in ascending order.

27. (b): Cost of a chocolate = ₹ 12.50

Cost of a pastry = ₹ 5.75

Cost of a packet of chips = ₹ 8.38

Add all the costs.

$$\begin{array}{r} ₹ 12.50 \\ ₹ 5.75 \\ + ₹ 8.38 \\ \hline ₹ 26.63 \end{array}$$

Therefore, Pushkar spent ₹ 26.63 in all.

28. (d): (a) $\frac{2}{10} = 0.2 \neq 0.3$

$$(b) \frac{7}{10} = 0.7 \neq 0.6$$

$$(c) \frac{4}{10} = 0.4 \neq 0.5$$

$$(d) \frac{5}{10} = 0.5$$

29. (d): (i) $17.432 - 12.876 + 82.49 - 51.905$

$$= 4.556 + 30.585 = 35.141$$

$$(ii) 39.2186 + 23.543 + 90.625 - 82.432$$

$$= 153.3866 - 82.432 = 70.9546$$

$$(iii) 69.3875 - 37.483 + 38.75 - 28.515$$

$$= 31.9045 + 10.235 = 42.1395$$

30. (c): Milk sold on Thursday = 129.91 litres

$$\begin{array}{r} 129.91 \text{ litres} \\ + 11.32 \text{ litres} \\ \hline 141.23 \text{ litres} \end{array}$$

Milk sold on Friday = 141.23 litres

Now,

$$\begin{array}{r} 141.23 \text{ litres} \\ - 18.94 \text{ litres} \\ \hline 122.29 \text{ litres} \end{array}$$

\therefore Milk sold on Saturday = 122.29 litres

Fill in the Blanks

1. Zero point one five

2. $10.69; 16.8 + 4.83 - 10.94 = 21.63 - 10.94 = 10.69$

3. $91.25; \text{Total weight of rice} = 75.50 \text{ kg} + 15.75 \text{ kg}$
 $= 91.25 \text{ kg}$

4. $29.97; \text{Required difference} = 3 \times 10 - 3 \times \frac{1}{100}$
 $= 30 - 0.03 = 29.97$

5. $14.55; 30.00 - 15.45 = 14.55$

6. 111100 cm; 1111 m = (1111×100) cm = 111100 cm
7. 10, 1000; $5 \times 10 + 4 + 9 \times \frac{1}{10} + 4 \times \frac{1}{1000}$
8. Greater; $\frac{1}{2} = \frac{1 \times 5}{2 \times 5} = \frac{5}{10} = 0.5$ is greater than 0.01.
9. Decimal point
10. Like

True or False

1. **False** : 2.10 and 2.100 are equivalent decimals.
2. **True**
3. **False** : The place value of 9 in 627.598 is $9 \times \frac{1}{100}$ (hundredth)
4. **False** : $12\frac{8}{10} = 12 + \frac{8}{10} = 12 + 0.8 = 12.8$
5. **False** : Total weight of cylinder filled with gas
 $= 18 \text{ kg } 75 \text{ g} + 12 \text{ kg } 350 \text{ g}$
 $= 18 \text{ kg} + \frac{75}{1000} \text{ kg} + 12 \text{ kg} + \frac{350}{1000} \text{ kg}$
 $= 18 \text{ kg} + 0.075 \text{ kg} + 12 \text{ kg} + 0.350 \text{ kg}$
 $= 18.075 \text{ kg} + 12.350 \text{ kg}$
 $= 30.425 \text{ kg} = 30 \text{ kg } 425 \text{ g}$
6. **False** : Decimals can be represented on the number line.
7. **False** : Numbers written in the decimal form are called decimal numbers.
8. **False** : $\frac{2}{4} = \frac{2 \times 25}{4 \times 25} = \frac{50}{100} = 0.5$
9. **True**
10. **True**

Match the Following

1. (d): $P \rightarrow 2; Q \rightarrow 4; R \rightarrow 1; S \rightarrow 3$

$$(P) \quad 2.220 = 2 \times 1 + 2 \times \frac{1}{10} + 2 \times \frac{1}{100}$$

$$= 2 + \frac{2}{10} + \frac{2}{100}$$

$$(Q) \quad 2.022 = 2 \times 1 + 2 \times \frac{1}{100} + 2 \times \frac{1}{1000}$$

$$= 2 + \frac{2}{100} + \frac{2}{1000}$$

$$(R) \quad 2.020 = 2 \times 1 + 2 \times \frac{1}{100} = 2 + \frac{2}{100}$$

$$(S) \quad 20.202 = 2 \times 10 + 2 \times \frac{1}{10} + 2 \times \frac{1}{1000}$$

$$= 20 + \frac{2}{10} + \frac{2}{1000}$$

2. (b): $P \rightarrow 3; Q \rightarrow 4; R \rightarrow 1; S \rightarrow 2$

$$(P) \quad \frac{2}{5} = \frac{2 \times 2}{5 \times 2} = \frac{4}{10} = 0.4 = 0.40$$

[To make denominator 10, multiply by 2]

$$(Q) \quad \frac{3}{4} = \frac{3 \times 25}{4 \times 25} = \frac{75}{100} = 0.75$$

$$(R) \quad \frac{7}{10} = 0.7 = 0.70$$

$$(S) \quad \frac{1}{4} = \frac{1 \times 25}{4 \times 25} = \frac{25}{100} = 0.25$$

3. (c): $P \rightarrow 3; Q \rightarrow 1; R \rightarrow 4; S \rightarrow 2$

$$(P) \quad \text{Total snowfall in three months}$$

$$= (30.5 + 45.25 + 25.25) \text{ cm} = 101 \text{ cm}$$

$$(Q) \quad \text{Kritika's weight} = 35 \text{ kg } 75 \text{ gm}$$

$$= 35 \text{ kg} + \frac{75}{1000} \text{ kg} = 35 \text{ kg} + 0.075 \text{ kg} = 35.075 \text{ kg}$$

$$\text{Khushi's weight} = 27 \text{ kg } 980 \text{ gm}$$

$$= 27 \text{ kg} + \frac{980}{1000} \text{ kg} = 27 + 0.980 \text{ kg} = 27.980 \text{ kg}$$

$$\therefore \text{Required difference} = 35.075 \text{ kg} - 27.980 \text{ kg}$$

$$= 7.095 \text{ kg}$$

Kritika is heavier by 7.095 kg.

$$(R) \quad \text{Naresh drive in morning} = 42 \text{ km } 35 \text{ m}$$

$$= 42 \text{ km} + \frac{35}{1000} \text{ km} = 42 \text{ km} + 0.035 \text{ km}$$

$$= 42.035 \text{ km}$$

$$\text{Naresh drive in evening} = 25 \text{ km } 7 \text{ m}$$

$$= 25 \text{ km} + \frac{7}{1000} \text{ km} = 25 \text{ km} + 0.007 \text{ km}$$

$$= 25.007 \text{ km}$$

$$\text{Total distance Naresh drive in all}$$

$$= 42.035 \text{ km} + 25.007 \text{ km} = 67.042 \text{ km}$$

$$(S) \quad \text{Total money Anu had} = ₹ 218.50$$

$$\text{Money spent on ice-cream} = ₹ 205.75$$

$$\text{Money left with Anu} = ₹ 218.50 - ₹ 205.75$$

$$= ₹ 12.75$$

Assertion & Reason Type

1. (c): Addition of zero at the end of decimal number does not change the value of the number.
Assertion : True; **Reason** : False

2. (a): **Assertion** : True; **Reason** : True and Reason is the correct explanation of Assertion.

3. (d): As, $211.902 = 2 \times 100 + 1 \times 10 + 1 + 9 \times \frac{1}{10} + 2 \times \frac{1}{1000}$

Assertion : False; **Reason** : True

4. (b): As $27.80 + 175.09 + 685.70 = 888.59$
To add decimal numbers column wise, we place decimal numbers and decimal points correctly one below the other and add them as in case of whole numbers.

Assertion : True; **Reason** : True but Reason is not the correct explanation of Assertion.

5. (d): As $735 \text{ m} = 0.735 \text{ km}$

Assertion : False; **Reason** : True

Comprehension Type

PASSAGE 1

1. (b): As $67.25 + 5.5 + 9.85 = 67.25 + 5.50 + 9.85 = 82.6$

In fraction form, $82.6 = \frac{826}{10}$

2. (c): ₹ 45.60

$$\begin{array}{r} + ₹ 70.00 \\ ₹ 115.60 \end{array}$$

Total amount spent by Amit = ₹ 115.60

Fractional form of $115.60 = \frac{11560}{100} = \frac{1156}{10}$

In lowest form, $\frac{1156 \div 2}{10 \div 2} = \frac{578}{5}$

3. (a): We have, $19.07 \text{ kg} = \frac{1907}{100} \text{ kg}$

As $1 \text{ kg} = 1000 \text{ g}$

$$19.07 \text{ kg} = \left(\frac{1907}{100} \times 1000 \right) \text{ g} = 19070 \text{ g}$$

PASSAGE 2

1. (c): Converting all quantities into g.

Weight of a squash ball = 34000 mg

Weight of a squash ball in grams = $\frac{34000}{1000} \text{ g} = 34 \text{ g}$

Weight of a cricket ball = 45 g

Weight of a basketball = $0.65 \times 1000 \text{ g} = 650 \text{ g}$

Weight of a football = $3 \times 1000 \text{ g} = 3000 \text{ g}$

$\therefore 34 < 45 < 650 < 3000$

\therefore The weight of squash ball is the lightest.

2. (b): Total weight of a basketball and football
 $= 0.65 + 3.00 = 3.65 \text{ kg}$

3. (c): Total weight of balls
 $= 34 + 45 + 650 + 3000 \text{ g} = 3729 \text{ g}$
In mg, $3729 \times 1000 = 3729000 \text{ mg}$

Subjective Problems

Very Short Answer Type

1. The decimal form of $\frac{5}{1000} = 0.005$

2. Upto hundredth place, numbers are same
At thousandths place $5 > 3$
 $\therefore 0.125 > 0.123$

$$\begin{array}{r} 12.17 \\ 7.83 \\ + 16.20 \\ \hline 36.20 \end{array}$$

Required sum = 36.20

4. 46 rupees 87 paise = $46 + \frac{87}{100}$
 $\left[\because 1 \text{ paise} = \frac{1}{100} \text{ rupees} \right]$
 $= 46 + 0.87 = 46.87 \text{ rupees}$

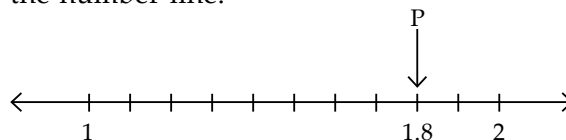
$$\begin{array}{r} 0.37 \\ - 0.25 \\ \hline 0.12 \end{array}$$

6. $6 \times \frac{1}{10} + 8 \times \frac{1}{100} = \frac{6}{10} + \frac{8}{100} = 0.68$

7. Converting 6, 0.4, 0.87 into equivalent decimals.
 $6.00 - 0.40 - 0.87 = 6.00 - 1.27 = 4.73$

8. $3\frac{1}{5} = 3 + \frac{1}{5} = 3 + \frac{2}{10} = \frac{3 \times 10}{10} + \frac{2}{10} = \frac{30 + 2}{10} = \frac{32}{10} = 3.2$

9. As $1 < 1.8 < 2$, divide the unit distance from 1 and 2 into 10 equal parts and take 8 parts in the number line.



\therefore P represents 1.8.

10. As, $2.1 = 2 + \frac{1}{10} + 0 + 0$

$$2.105 = 2 + \frac{1}{10} + \frac{5}{1000}$$

$$2.011 = 2 + \frac{1}{100} + \frac{1}{1000}$$

Clearly, $2.011 < 2.100 < 2.105$

Short Answer Type

1.

S. no.	Number	Hundreds	Tens	Ones	Tenths	Hundredths
(a)	18.5	0	1	8	5	0
(b)	125.31	1	2	5	3	1

(a) 18.5 – Eighteen and five tenths

(b) 125.31 – One hundred twenty five and thirty one hundredth

2. We have, 8.88, 8.088, 88.8, 88.08, 8.008

Converting into equivalent decimals, we get
8.880, 8.088, 88.800, 88.080, 8.008

In descending order,

88.800, 88.080, 8.880, 8.088, 8.008.

3. (a) 412.607

$$= 4 \times 100 + 1 \times 10 + 2 \times 1 + 6 \times \frac{1}{10} + 7 \times \frac{1}{1000}$$

$$= 400 + 10 + 2 + \frac{6}{10} + \frac{7}{1000}$$

(b) 1243.26

$$= 1 \times 1000 + 2 \times 100 + 4 \times 10 + 3 \times 1 + 2 \times \frac{1}{10} + 6 \times \frac{1}{100}$$

$$= 1000 + 200 + 40 + 3 + \frac{2}{10} + \frac{6}{100}$$

4. 40 rupees 80 paise in rupees

$$= \left(40 + \frac{80}{100} \right) \text{ rupees} = 40 + 0.80 = 40.80 \text{ rupees}$$

95 rupees 50 paise

$$= \left(95 + \frac{50}{100} \right) \text{ rupees} = 95 + 0.50 = 95.50 \text{ rupees}$$

Sum of 40 rupees 80 paise and 95 rupees 50 paise

$$\begin{array}{r} 40.80 \text{ rupees} \\ + 95.50 \text{ rupees} \\ \hline 136.30 \text{ rupees} \end{array}$$

5. Rahul walked 3.58 km.

Ramesh walked 3.2 km = 3.20 km

Now, in tenth place $5 > 2$

So, $3.58 \text{ km} > 3.20 \text{ km}$

\therefore Rahul walked more distance than Ramesh

As, $3.58 - 3.20 = 0.38 \text{ km}$

\therefore Rahul walked more distance by 0.38 km.

6. Convert 3.23, 29.375, 81.2016, 0.3376 into like decimals.

So, 3.2300, 29.3750, 81.2016, 0.3376

$$\begin{array}{r} 3.2300 \\ 29.3750 \\ 81.2016 \\ + 0.3376 \\ \hline 114.1442 \end{array}$$

Required sum = 114.1442

7. Cost of almirah = ₹ 3675

Cost for its cartage = ₹ 172.50

Cost on its repair = ₹ 64.80

\therefore Total money spent for almirah

$$= ₹ (3675 + 172.50 + 64.80) = ₹ 3912.30$$

8. Height of Jyoti = 1.59 m

Height of Geetanjali = 0.94 m

Subtract Geetanjali's height from Jyoti's height.

$$\begin{array}{r} 1.59 \\ - 0.94 \\ \hline 0.65 \end{array}$$

Geetanjali is 0.65 m shorter than Jyoti.

9. $53.50 - 34.68 + 64.75 - 28.90$

[Converting into like decimals]

$$= 18.82 + 35.85 = 54.67$$

10. Original length of ribbon = 15 m

Length of ribbon cut out = 7 m + 6.5 m = 13.5 m

Remaining part of length = 15 m – 13.5 m = 1.5 m

Long Answer Type

1. Milk bought by Rahim = 8.5 litres

Milk bought by Ravinder = 7.25 litres

Milk bought by Rohit = 9.4 litres

Milk bought by all = $(8.5 + 7.25 + 9.4)$ litres
= 25.15 litres

Quantity of milk left in booth = 30 litres – 25.15 litres
= 4.85 litres

2. (i) Consider, $81.61 - 41.4135$

Put zeroes in 81.61 to make four decimal places
i.e. 81.6100

$$\text{So, } 81.6100 - 41.4135 = 40.1965 \quad \dots(1)$$

Now consider, $503.37 + 253$

Put zeroes in 253 to make two decimal places

$$\text{So, } 503.37 + 253.00 = 756.37 \quad \dots(2)$$

Subtract (2) from (1), we get

$$40.1965 - 756.3700 = -716.1735$$

(ii) Consider $91.469 + 39.65$

Put zeroes in 39.65 to make three decimal places
i.e., 39.650

So, $91.469 + 39.650 = 131.119$... (1)

Now consider, $-57.255 + 14.50$

Put zeroes in 14.50 to make three decimal places
i.e., 14.500

So, $-57.255 + 14.500 = -42.755$... (2)

Adding (1) and (2), we get

$$131.119 - 42.755 = 88.364$$

(iii) Consider $23.667 - 2.55$

Put zeroes in 2.55 to make three decimal places
i.e., 2.550

So, $23.667 - 2.550 = 21.117$... (1)

Now consider, $-19.205 + 80.432 = 61.227$... (2)

Adding (1) and (2), we get

$$21.117 + 61.227 = 82.344$$

3. Weight of fruits = 6 kg 25 g
 $= 6 \text{ kg} + \frac{25}{1000} \text{ kg} = 6 \text{ kg} + 0.025 \text{ kg} = 6.025 \text{ kg}$
 Weight of vegetables = 4 kg 355 g
 $= 4 \text{ kg} + \frac{355}{1000} \text{ kg} = 4 \text{ kg} + 0.355 \text{ kg} = 4.355 \text{ kg}$
 Weight of fruits and vegetables
 $= 6.025 \text{ kg} + 4.355 \text{ kg} = 10.38 \text{ kg}$
 Weight of bag with contents = 11 kg
 \therefore Weight of empty bag = $11 \text{ kg} - 10.38 \text{ kg} = 0.62 \text{ kg}$
4. Distance covered by car = 11 km 35 m
 $= 11 \text{ km} + \frac{35}{1000} \text{ km} = 11 \text{ km} + 0.035 \text{ km} = 11.035 \text{ km}$
 Distance covered by bus = 3 km 75 m
 $= 3 \text{ km} + \frac{75}{1000} \text{ km} = 3 \text{ km} + 0.075 \text{ km} = 3.075 \text{ km}$
 Total distance covered by car & bus
 $= (11.035 + 3.075) \text{ km} = 14.11 \text{ km}$
 Distance between Raj's house and his office
 $= 16 \text{ km}$
 Distance covered by walking = $16 \text{ km} - 14.11 \text{ km}$
 $= 1.89 \text{ km}$
5. Between 2.5 and 3, there are 14 numbers with 2 decimal places contain the digit 7 i.e.,
 2.57, 2.67, 2.70, 2.71, 2.72, 2.73, 2.74, 2.75, 2.76,
 2.77, 2.78, 2.79, 2.87, 2.97
 Consider first seven numbers, $2.57 + 2.67 + 2.70$
 $+ 2.71 + 2.72 + 2.73 + 2.74 = 18.84$

Now consider last seven numbers = $2.75 + 2.76$

$$+ 2.77 + 2.78 + 2.79 + 2.87 + 2.97 = 19.69$$

Now, their difference = $19.69 - 18.84 = 0.85$

Integer Type Questions

1. (9): Adding 8.3 and 5.6, we get
 $8.3 + 5.6 = 13.9$
 \therefore The decimal part is 9.
2. (4): In 5.04, 4 is the hundredth part.
3. (5): Sum of 4.5 and 2.5 = 7
 Difference of 4.5 and 2.5 = 2
 Product = $7 \times 2 = 14$
 Sum of the digits of 14 = $1 + 4 = 5$
4. (3): $1 \text{ gm} = \frac{1}{1000} \text{ kg}$
 $8 \text{ gm} = \frac{8}{1000} \text{ kg}$
5. (3): $3 + 0.4 + 0.01 + 0.001$
 Put zeroes in 3, 0.4, 0.01 to make three decimal places i.e., 3.000, 0.400, 0.010
 $\therefore 3.000 + 0.400 + 0.010 + 0.001 = 3.411$
 \therefore The whole number part in 3.411 is 3.
6. (5): Height of Sonu = 1.25 m
 Height of Reena = 1.3 m
 Reena is $(1.3 - 1.25) \text{ m} = 0.05 \text{ m} = 0.05 \times 100 = 5 \text{ cm}$
 taller than Sonu.
7. (6): $8.5 - 2.5 = 6.0$
8. (5): $0.05 = \frac{5}{100}$
 \therefore Numerator is 5.
9. (0): $13.5 + 1.57 = 13.50 + 1.57 = 15.07$
 So, the tenths place value is 0.
10. (1): $0.04 = \frac{P}{25}$
 $\Rightarrow \frac{4}{100} = \frac{P}{25}$
 $\Rightarrow \frac{4 \div 4}{100 \div 4} = \frac{P}{25}$
 $\Rightarrow \frac{1}{25} = \frac{P}{25}$
 $\therefore P = 1$

